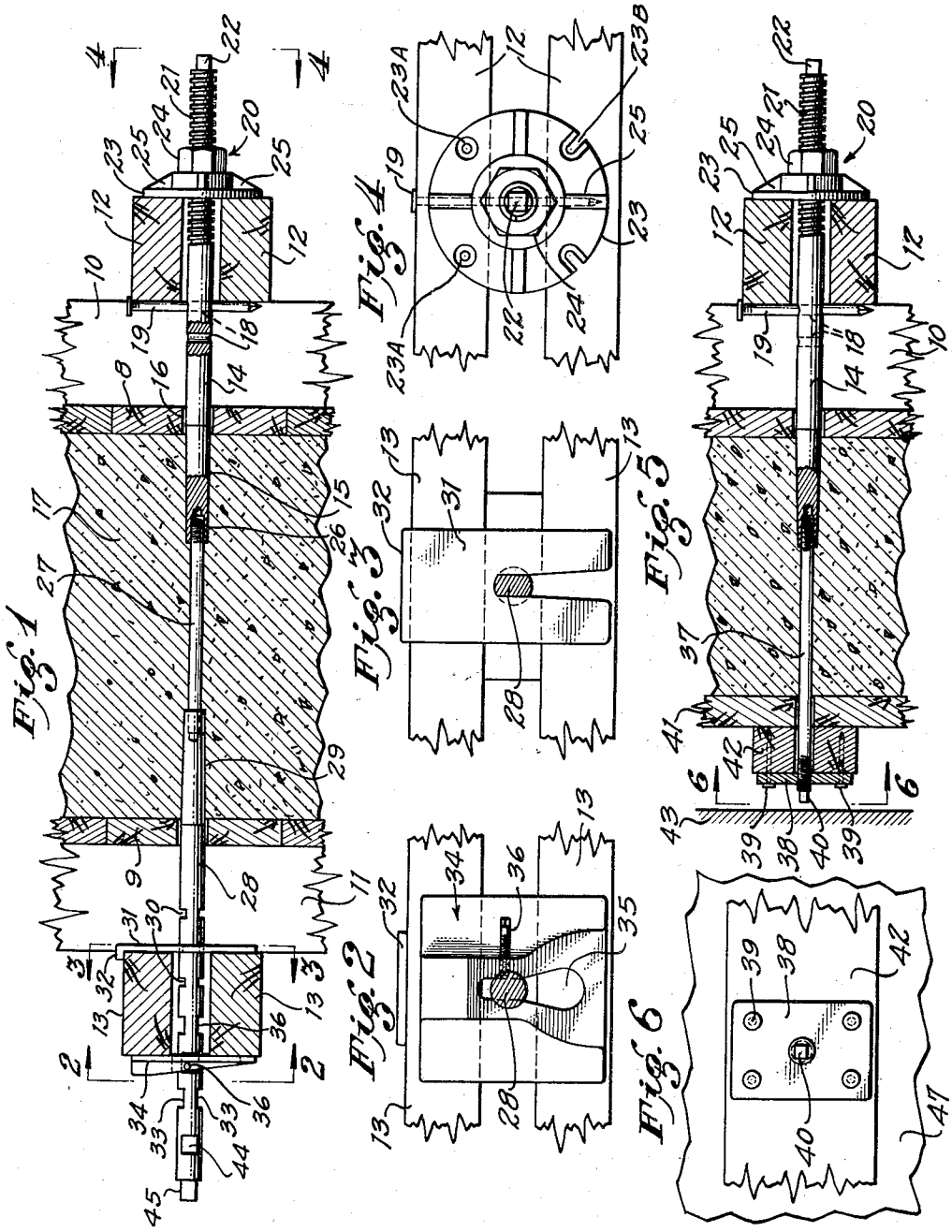
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CLAMP FOR CONCRETE WALL FORMS

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INVENTOR,
CARL PILJ.
BY Wm. Edward Hann.
ATTORNEY

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CLAMP FOR CONCRETE WALL FORMS

Carl Pilj, Los Angeles, Calif.

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1 Claim. (Cl. 25—131)

This invention relates to clamps for concrete wall forms.

The main objects of this invention are to provide an improved wall form clamp which may be readily withdrawn from the wall; to provide such a clamp which will leave a relatively small hole in the wall when withdrawn; to provide a clamp of such character that the forms may be quickly and easily secured in place; to provide a clamp for wall forms which has a wide range of adjustment; to provide a wall form clamp which may be used in close or confined places where only one side of the wall is accessible after construction but from which all the form clamps may be removed and recovered and to provide a wall form clamp which is simple and sturdy in construction and which is, at the same time both durable and economical.

An illustrative embodiment of this invention is shown in the accompanying drawing, in which:

Fig. 1 is a fragmentary view in vertical transverse section of a wall and forms therefor secured in place by the improved wall clamp, one specific form being shown on one side of the wall and another specific form of the clamp being shown at the opposite side of the wall.

Fig. 2 is an enlarged view taken on the line 2—2 of Fig. 1 looking in the direction indicated by the arrows.

Fig. 3 is an enlarged view taken on the line 3—3 of Fig. 1 looking in the direction indicated by the arrows.

Fig. 4 is an enlarged view in elevation looking in the direction indicated by the arrows 4—4 of Fig. 1.

Fig. 5 is a fragmentary view in transverse vertical section of a concrete wall and forms therefor showing the form of wall clamp used in blind or inaccessible places.

Fig. 6 is an enlarged view of the special plate shown at the left end of Fig. 5 with the view taken looking in the direction indicated by the arrows 6—6.

In the constructions shown in the drawing, horizontally disposed sheathing boards 8 and 9 are held in vertically aligned spaced parallel relation by vertically disposed studs 10 and 11 respectively, which are placed against the outside of their respective sheathing and which in turn are held in position by horizontally disposed walers 12 and 13 respectively.

The sheathing, studs and walers comprise the usual wall forms used in the pouring of concrete walls and the like and after the concrete is set these forms are removed for other or further use.

Improved clamping means are provided for holding the wall forms in position during the pouring of the concrete and comprise, in the embodiment shown at the right end of Fig. 1, an elongated relatively slender clamp member 14 of circular cross-section, the inner end 15 of which is formed exteriorly with a relatively long taper, which tapered end is adapted to extend through an aperture 16 formed in the sheathing 8 and into the concrete wall 17. The outer end of the clamp member 14, i. e., that part which extends outside of the sheathing 8, is provided with a plurality of axially spaced transversely extending apertures 18, which are adapted to receive an abutment pin 19 in the form of a nail or spike and against which the walers 12 are clamped.

Means are provided for clamping the walers 12 against the abutment pin 19 and comprise a combined nut and washer, generally designated 20, which is threaded onto the exteriorly threaded outer end 21 of the clamp 14, the extreme tip 22 of the clamp being formed of square cross-section to receive a wrench for turning the clamp.

The combined nut and washer 20 comprises a relatively large radially flanged portion 23, having one side plane and adapted to bear against the walers 12. The nut portion 24, preferably of hexagonal cross-section, is integrally formed with the flanged portion 23 and in axially spaced relation with respect thereto, it being understood that the combined nut and flange is provided with an axially extending opening which is interiorly threaded to screw on to the threaded end 21 of the clamp.

Means are provided for strengthening the structure and providing rigidity between the nut portion 24 and the flanged portion 23 and comprise a plurality of radially extending integrally formed reinforcing webs 25 which extend from the base of the nut portion 24 radially outwardly to the marginal edge of the flanged portion 23.

The flange 23 is provided at spaced points about its marginal edge with apertures 23A and slots 23B for receiving nails or the like by which the combined nut and washer may be detachably secured to the walers 12, it being understood that the flange can be provided either with all slots or all holes or some of each as illustrated in Fig. 4.

The end of the tapered portion 15 of the improved clamp 14 is provided with an axially extending interiorly threaded socket 26 preferably provided with right hand threads, which is adapted to receive one end of an exteriorly threaded tie rod 27.

The form of clamp shown at the left side of

Fig. 1 is substantially the same as that shown at the right side thereof except with respect to the waler clamping means. In this construction, the clamp member 28 has an inner long tapered end 29 provided with an axially extending threaded socket to receive the opposite end of the tie rod 27.

The outer end of the clamp member 28 is provided with a series of axially spaced transversely disposed notches 30 formed in diametrically opposite sides of the member with alternate pairs of notches extending at right angles to each other. The notches 30 are adapted to receive a bifurcated abutment plate 31, as shown most clearly in Fig. 3, the top end of said plate being flanged over as shown most clearly in Fig. 1 at 32 so as to engage over the marginal edge of the waler 13 and thereby prevent rotation of the clamp member 28 when said waler is secured thereagainst.

Outward from the series of notches 30, the clamp member 28 is also provided with another series of axially spaced transversely extending notches 33 which are spaced from the notches 30 a distance substantially equal to the width of the walers 13. The notches 33 are adapted to receive a wedge 34 which is in the form of a rectangular cast metal plate having an elongated opening 35 formed therein through the thickened or wedge portion of the plate.

That part of the opening 35 which is toward the thinner edge of the wedge is of sufficient size to readily slip over the outer end of the clamp member 28 and said opening narrows in as it extends toward the thick end of the wedge so that the side walls of the opening snugly embrace the opposite sides of the clamp member 28 when fitted into any of the pairs of notches 33.

Means are provided for securing the wedge 34 in position and prevent loosening of the same due to vibration and comprise a set screw 36, which is threaded through the side of the wedge 34 in position to have its inner end abut against a side of the clamp member 28 when the wedge is engaged in any of the notches 33 and in engaging position thereon.

In the construction shown in Figs. 5 and 6 of the drawing, the clamp member 14 has a special tie rod 37 threaded into its inner tapered end, which extends through registering openings in the wall forms and is threaded into a plate 38 which is secured to the wall forms by nails 39. The threaded end 40 of the tie rod 37 which engages the plate 28 is provided with threads inclined oppositely to those at the opposite end of the tie rod and are preferably left hand threads so that the sockets in the ends of the clamps 14 may be standardized with right hand threads. As shown in Fig. 5 the sheathing 41 and walers 42 are positioned very close to a wall 43 so that it would not be possible to remove the tie clamps from that side of the wall in the usual manner.

In the operation and use of this clamp, the sheathing 8 and 9, studs 10 and 11 and walers 12 and 13 are set up in the usual and customary manner, with the abutments either in the form of nail 19 or bifurcated plate 31 being put in place, depending upon which type of clamp is used and the combined nut and washer 20 or the wedge 34 being tightened in place so as to secure the forms in place during the pouring of the concrete.

When it is desired to remove the clamp 14, the combined nut and washer 20 is loosened sufficiently to permit removal of the abutment pin 19 and then a wrench is applied to the square end 22 and the clamp rotated in the left hand direction. Such rotation, by reason of the nut and washer 20 abutting against the walers, will withdraw the clamp member from the concrete wall and leave a relatively small opening therein due to the long slender taper of the clamp, it being understood, of course, that the clamp member 28 is first unscrewed from the connecting tie rod 27.

In removing the clamp 28, wedge 34 is first removed after loosening the set screw 36 and then the abutment plate 31 is removed. Thereupon, a special form of jarring tool is engaged in notches 44, which are formed at diametrically opposite sides of the clamp member closely adjacent to its outer end, the outer tip end 45 of this member being of square cross-section to receive the wrench in the same manner as the clamp member 14.

In the wall clamp illustrated in Figs. 5 and 6 of the drawing, when it is desired to remove the clamp and release the forms, the combined nut and washer 20 is first loosened sufficiently to permit removal of the abutment pin 19. A wrench is then applied to the square end 22 and the clamp rotated in a right hand direction which will cause the left hand threaded end 40 to unscrew from the plate 38. When these threads have become disengaged, the clamp may be readily withdrawn by rotating the combined nut and washer 20 in a right hand direction or rotating the clamp 14 in a left hand direction.

After the tie rod 37 has been withdrawn completely from the sheathing 41, the wall forms may be withdrawn upwardly from the confined space in which they have been clamped, the plate 38 remaining on the forms due to its being secured by the nails 39.

Although an optional form of wall clamp has been shown herein, it will be understood that numerous details of the constructions shown may be altered or omitted without departing from the spirit of this invention as defined by the following claim.

I claim:

In a concrete form wall clamp, a clamp member having an inner end adapted to be positioned within a wall when formed and an outer end adapted to extend without such wall, such inner end being formed with a relatively long taper, whereby it may be readily withdrawn from a concrete wall and will leave a relatively small hole therein, said inner end having an axially extending interiorly threaded socket therein, a tie rod having one end threaded into said socket, said rod being adapted to extend through and beyond the opposite side of a wall, the extending end of said rod being threaded oppositely to the end thereof threaded into said socket, and a plate member adapted to be attached to the forms at said opposite side of the wall, said plate having a threaded aperture for receiving the oppositely threaded extending end of said tie rod.

CARL PILJ.